The Builder.

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OUR FIFTH VOLUME.

IN accordance with custom, we would bespeak, by a few words of kindly introduction, the good will of our readers for our forthcoming volume. We are as much led to do this by feeling, as bound to it by duty. We desire to stand well with them; to have their confidence: we would enlist their aid and secure their esteem. To be thought honest and useful recorders of facts,—even able expounders of principles (high praise as it would be), is not the extent of our ambition. We would have it felt that we have high objects in view, and are impelled by loftier motives than pecuniary profit or desire for reputation: that we are labouring honestly and sincerely, to advance the well-being and the happiness of our fellow men, and would find greater reward in effecting this than in personal success. That it is so we most seriously aver: and we therefore ask all who have the same end in view, or regard it with the consideration it demands, to give us the hand of fellowship, and look upon us as fellow-labourers in a work of great and universal interest.

The spread of architectural knowledge; the improvement of dwelling-places; the science of heat, of sound, of ventilation; legislative enactments affecting constructions, and the due administration of them; facilities of communication; a dissemination of a knowledge and love of art; and the score of other objects which specially occupy our pages, are but means to an end,—and that end is, the health, well-being, happiness, GOODNESS, of the community at large.

The effect of an ill-ordered dwelling on the health of the inmates, and the connection between health and *morals*, are becoming understood. When once universally felt, improvements and ameliorations will be adopted more rapidly than they are now. Once make it the public opinion that improvements in this respect *must* be effected, and the thing is done.

The intimate connection which exists between the *good* and the *beautiful*, is not so obvious, but is none the less certain. The assertion of it has been duly scoffed at by those who could not understand it, but has now passed its probation, and is establishing itself in the public mind.

The effect produced on national character by the contemplation of works of art,—fine pictures, exalted statuary, or noble buildings,—is very great; much greater than is generally supposed; and has been too long overlooked in our country. The perfect and general recognition of it would lead to the free admission of the public to all national monuments and works of art, the adornment of cities, and the exercise of greater care in the selection of designs for public buildings.

Two years ago (in the preface to our third volume) we said, "It must be constantly remarked that architecture, as a *fine art*, is much less understood by the public than as a useful art, whence it follows that our advance in matters of taste is much slower than in matters of utility;" and the observation unfortunately is not yet out of date. On all matters of art the ignorance which prevails is excessive. It will continue to be our aim to spread abroad a knowledge of the principles of criticism, and to cultivate the taste of our readers, so far as we may be able to do se.

The coming year promises to be a busy one. A revised Buildings Act, the prevention of interments in towns, the abolition of the window-tax (a tax on cleanliness, health, and morals), the prevention of smoke, and general sanatory regulations, will probably come before the legislature, and will demand our attention. The new buildings commenced and projected are numerous. Amongst these, in the metropolis alone, we may mention the additions at Buckingham Palace, concerning which the public, up to this time, are entirely ignorant; the Carlton Club-house; Bridgewater House; new Westminster bridge, or whatever else it may be called, if the preposterous proposal to remove it be not defeated; Covent Garden theatre; the new theatre in Leicester-square; a building for the Records; improvements in the city; a score of churches of more or less pretension; and works in connection with the railways, of surprizing magnitude.

In the provinces too, much is contemplated; and we shall not fail to give the public full information of what is passing, both there and on the continent.

While we seek to render our journal valuable to architects, engineers, artists, and a large body of general readers, the building trade will find their interests watched and their requirements attended to. All new inventions likely to be of use to them, improvements in construction, new materials, and proceedings under the Buildings Act, will have our continued attention; nor shall we relax in our endeavours to induce a more careful preparation of estimates, and the maintenance of a judicious and enlightened course, as well between themselves and their workmen, as between themselves and their employers.

EXPLOSION OF BOILERS.—The constant occurrence of accidents to steam boilers, is disgraceful to us as a nation in a mechanical point of view, and calls for inquiry. It would seem to be necessary that every boiler should be examined by a public officer before it is sent out.

THE LIFE OF JAMES GANDON, ARCHITECT.

MESSRS. HODGES and SMITH, of Dublin, have made a very interesting addition to architectural biography, in publishing a life of Mr. Gandon.* It contains much valuable matter, and should be read, especially, by every architect who finds his spirits flag under the difficulties which attend him in his profession, even when successful.

GANDON was born on the 29th of February, 1742, in New Bond-street, London, and received his education at a boarding-school, at Kensington Gravel Pits, where he manifested a great predilection for mathematics and drawing. His father, Peter Gandon, becoming a proselyte to the science of alchemy, dissipated in fumes much of his property, and was involved to such an extent by mismanagement, that at fourteen our hero found himself recalled from school, and thrown entirely on his own resources. Having great love for the arts, he applied himself vigorously to study them, especially architecture and perspective: he read all day, and drew at Shipley's academy (then the best esteemed in London) every evening.

At this time Mr. William Chambers arrived in England from Rome, and being advised to settle here, bought a house in Poland-street. Hearing that he was in need of assistance, some of Gandon's friends advised him to call on Mr. Chambers, and shew his portfolio. The result of which was that Chambers took him into his house as a pupil, with a very moderate fee. Here he was introduced to the late Earl of Charlemont, who continued during his life one of his most attached friends. He obtained many other valuable friends, and when he left Sir William Chambers' office, and commenced practice, appears to have been introduced to good connections.

About the year 1766 (misprinted in the life 1776), he formed the intention of publishing a continuation of the "Vitruvius Britannicus," published by Colin Campbell, and in conjunction with Mr. Woolfe, of the Board of Works, issued two folio volumes before completing his 25th year.

In 1767 he exhibited, at two exhibitions arranged by the Incorporated Society of Artists, a design for a Mausoleum in memory of Handel, erected in the demesne of Sir S. Hillier, Staffordshire, and a design for a palace. About this same time he designed a park screen, which was erected in Portman-square, at the residence of the celebrated Mrs. Montague. His energy and industry were of no ordinary kind, for between 1766-1769 he had, in addition to the works we have spoken of, gained the premium for designs for the Court House of Nottingham (afterwards erected), obtained the gold medal offered by the Royal Academy, then just established (1768), and furnished designs for the Royal Exchange in Dublin. It seems that when he saw the Academy medal advertised, he was not a student, and therefore was not eligible; he however quickly removed that disability, and carried off the prize,—the subject of the design was a triumphal arch, commemorative of the seven years' war. Chambers appears to have

* "The Life of James Gandon, Esq., M.R.I.A., with original notices of contemporary artists, and fragments of Essays." From materials collected by his Son. Edited by the late Mr. T. J. Mulvany, R. H. A. Hodges and Smith, Dublin: 1846.

felt interested in his success on this occasion. Paul Sandly, the artist, was his warm friend, and introduced him to the Right Hon. John C. Beresford, who became his great patron, and ever continued so.

We should mention, that the plans for the Dublin Exchange were submitted in competition, at the suggestion of some of his friends who were on the spot. He had sixty-four competitors, and obtained the second premium. The first was given to Mr. Cooley: the third to Mr. T. Sandby.

On this occasion Malton, the author of a Treatise on Perspective, well known, published some abusive remarks on Gandon's design.*

In 1771, Gandon took a large house in Broad-street, where he remained for ten years, and married a lady to whom he had been long attached. During this period, namely, in 1776, 100 gnineas were offered by advertisement for the best designs for the new Bethlehem Hospital, and Gandon, although fully occupied, and the task was one requiring much study, was led to submit plans. He was assisted in the preparation of these by the eminent philanthropist Mr. John Howard, and was awarded the premium, without a dissentient voice. The sum so gained, however, was quite incommensurate with the labour he had bestowed upon the work, which had nearly killed him; his object was of course to carry out the design, and he was therefore deeply mortified to see it handed over for that purpose to a man of very inferior ability.

In 1779, inducements were offered him to settle in Petersburgh; but while he was deliberating upon them, Lord Carlow and Mr. Beresford invited him to Ireland, at first on general grounds, with the offer of a pension till he was established, but afterwards for the express purpose of building a new custom-house. This determined his future course, and in April 1781, having previously forwarded his sketches, he left London for Dublin. Here, however, he found himself in a position of great difficulty: the proposal was most unpopular; for several weeks he was compelled to keep himself concealed; and when it was determined to go on, meetings were held to prevent it, and great tumult ensued. The first stone was laid in August 1781, but the difficulties in the way were not overcome till long after that: he was himself constantly threatened, and never visited the works without a good cane-sword.†

During the progress of the custom-house, he was solicited by the Earl of Tyrone (afterwards Marquis of Waterford) to make designs for a court-house in Waterford; and to oblige Mr. Beresford, he complied with the request against his will. This building unfortunately proved the source of great annoyance and trouble to him: chiefly caused by conflicts between the grand juries and the corporation, relative to raising the money to pay the workmen, and he was compelled to remonstrate with the grand jury. "In my interview with these gentlemen," he says, "I found they had a very erroneous idea of the profession of an 'architect,' as it stood in England. Some of them considered me as a contractor, or, as they termed me, 'a projector and undertaker,' not one of those sable personages whose occupation it is to bury the dead, but to bury stones and mortar!‡

"Having explained to them what my profession really was, and that I only conducted works, not contracted for them, the artificers were promised a settlement."

He afterwards sought to resign the appointment, but was induced by his steady friend, Mr. Beresford, to persevere. Various other commissions were offered to him, but were mostly refused; when applied to, however, to design improvements in the Irish House of Parliament, he could not decline, and his plans were ultimately carried out. New courts of law followed, and during the execution of these he was much harassed by an opposition in the House of Commons, and other endeavours to stop the works. In his notes he says;—"I cannot but observe in this place, the injurious tendency of repeated attempts of this kind on any of the works of which I had the management. Whenever the stopping of them became in this manner subject of conversation, impediments to their future progress immediately took place; every artificer was apprehensive that the materials prepared or ordered would be thrown on his hands, and that his bills might remain long unpaid. This directly gave a check to every exertion on their parts, by withdrawing their men, and counter-ordering the materials which came from any distance; so that when the business was to recommence, the season was nearly lost by the delays, which circumstance occasioned considerable injury to the works. Indeed, the frequent opposition given to this work had so harassed and disgusted me, that I did not like to go near it; and it prevented me from constructing the inner dome with brick, which, for the sake of expedition, and to save expense, was done with carpentry."

A report which he drew up in January 1794, shewed that 44,234*l.* had been expended on the courts up to that time, and that 15,898*l.* were wanted to complete them: further, that delay would entail great expense and injuries. The result of this was a vote of 16,000*l.*, and the completion of the courts for the reception of the Judges by November 1796. The whole of the buildings, however, were not finished till 1802.

In respect of some designs made by Mr. Gandon for considerable additions to the Irish House of Commons, he considered himself ill-treated, his plans being carried out by others without compensation to him.

In 1786 he gave designs for a military college in Phœnix-park (also carried out by others), and in 1791 built Carlisle bridge. The last building which he conducted was the King's Inns, Dublin, the first stone of which was laid in 1795. During this time the works at the Custom-house were going on (interrupted for a time by the lamentable political occurences of this period), and with them constant annoyances to Gandon. At the King's Inns too, he found objectors and difficulties; and considering relaxation necessary, he resigned the appointment, and retired to his house at Lucan, about the year 1808, where he afterwards died, aged eighty-two. Amongst his last projects was one, which he forwarded to Lord Castlereagh in 1816, on the subject of a triumphal memorial to celebrate the achievements of the navy. He proposed that Westminster Bridge should be made a triumphal bridge, with a colonnade over the centre arch, and the statues of the admirals on the adjoining piers. Lord Castlereagh's secretary, in acknowledging it, said his lordship's avocations did "not permit his attending to proposals of *such a nature!*"

Our epitome of Gandon's life having already extended farther than was at first proposed, we can only say that the volume before us contains notices by himself of Captain Grose, the antiquary; Horace Hone; Sir William Chambers; Paul Sandby; Athenian Stuart, and many others; together with an essay on the progress of architecture in Ireland, and hints for erecting testimonials.

A description and review of his works, by an impartial hand, would have been a valuable addition. Some of them possess great merit.

WINDSOR CASTLE.—An alteration in the present arrangements, by which tickets for viewing the state apartments can be obtained only in town, is contemplated. It has not worked well lor Windsor.

ON THE SEVEN ARCHITECTURAL HARMONIES OR PROPORTIONS,

CONSISTING OF MAXIMS AND PRACTICAL RULES FOR REGULATING THE SIZE OF ROOMS, DOORS, AND WINDOWS.

IN the construction of rooms in buildings, whether they are designed for convenience and comfort, or merely to please the eye by their elegance and beauty, there are certain rules and proportions to be observed, which, being dependent on the principles of natural harmony, cannot be violated without offending the most stolid and unpractised eye, and producing an effect precisely the reverse of that which was originally contemplated by the design.

It is not known to us, whether or not the architects of modern times are generally acquainted with the rules and proportions to which we allude; but if they are, one thing is certain, that such knowledge is to them no better than a dead letter, for it would be difficult to point out one single example amongst the most celebrated erections of our times, in which an astute and judicious observer could not detect some very glaring inconsistency; and it would be still more difficult to produce an instance, in which the proportion of parts has been rigorously adhered to, both externally and internally, in the same building, if indeed we except one or two very conspicuous and rare examples copied from Sir Christopher Wren and Inigo Jones, but which examples it is unnecessary to mention more particularly in this place.

In music, nature has established certain rules for adjusting the proportions of sounds, so as to please the ear by the production of harmony. In like manner, architecture has its rules and maxims dependent on similar proportions, or at least on such principles as are similarly adapted for pleasing the eye, by effecting such arrangements as combine to produce the harmony of order.

Beauty and proportion are inseparable between themselves, for wherever the one of them exists so must the other; there must consequently be some fixed and immutable laws by which they are produced in unison, and the more we violate those laws, the more we offend nature, and the farther do we recede from the attainment of real elegance and imposing symmetry. It is therefore indispensable in accurate practice, that just laws should be rigorously adhered to; and it is for the purpose of inculcating the application of those laws, that the subject of the present paper is humbly submitted to the perusal of the candid and intelligent architectural reader.

There are in music only seven distinct degrees of sound that are recognised by the human ear; so in architecture, which is more immediately the subject of geometrical harmony, there are only seven distinct proportions or gradations of form, which by reason of their affinity to the notes in music are rendered pleasurable to the eye, and under one or other of these proportions every species of building that has the smallest claim to regularity of arrangement or accuracy of principle may be comprehended.

Palladio has testified to the fact, although he abstains from assigning a reason, why those proportions and no other should produce such agreeable sensations on the eye and the imagination. He specifies seven distinct proportions or varieties of form which he calls *beautiful*, but beyond this point he does not attempt to proceed, and accordingly here the analogy breaks off, leaving us to assume, that no other terms in the series would be found in perfect accordance with the laws of nature as referred to this particular subject.

The proportions particularized by Palladio, are the circle, the square, the diagonal of a square, the square and its third, the square and its half, the square and two-thirds, and the square doubled. At this term the series terminates, no other additional point being assignable, from which the entire profile of a building could be distinctly encompassed at one view, without moving the eye from its original position.

These analogies are perfectly in accordance with the laws of nature, in as far as they have a direct reference to plane figures of only two dimensions; but as all buildings involve the idea of three dimensions, viz. length, breadth, and depth or height, it becomes necessary so to modify the foregoing proportions as to take

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* At a later period of Gandon's life, he employed Malton's son in his office, at the urgent request of the father, but, after three years, was obliged to discharge him for betrayal of confidence.

† The foundation of the new building was very bad, and required the utmost care. Piling was resorted to, but had objections besides that of expense. He says, in his own notes,—"I therefore gave directions to have a grating of Memel timber prepared, the timber to be one foot square, to have the upper ones notched down three inches in the ground pieces, which were to be bedded on a layer of cut heath, the whole ground being first correctly levelled; the interstices of the grating to be filled in with hard sound stock bricks, up to the level of the timbers, swimming in mortar composed of pounded roach-lime and mortar well mixed, which answered nearly as well as tarras; over which was laid four-inch fir plank, fastened down on the grating with oak trennels, which was all completed. The foundation-walls were then set out on the 17th of September. The part directly under the cupola was laid with rough blocks of mountain-granite, in regular courses; in the first course was sunk an iron chain of flat bar, four inches wide and two and a half inches thick, into collars which were run with lead, but the bars were only covered with a cement of wax, resin, and stone dust."

‡ The following testimonial will shew to what class of persons the professional term "architect" was applied in the country parts of Ireland about fifty years ago.

"We have known Benjamin Shorter, of Bandon, architect, for the last ten years, during which period he has worked for us at different times, and in every matter executed his work in a very proper and masterly manner. We recommend him, therefore, to the public as an honest, industrious, sober, able workman, and think him very capable of executing any work he undertakes."

into account the three linear dimensions of the fabric, and for this purpose, we have only to apply a similar mode of reasoning, and a similar process of variation, to the cube considered as a basis, which Palladio adopted for the square, since this figure bears precisely the same analogy to solid bodies that the square does to plane surfaces, each of them being made the measuring unit of their respective species of magnitude.

Thus modified, the seven varieties of proportion which constitute the subject of the present paper become—

No. 1—1, 1, 1, corresponding to the perfect cube.
No. 2—1½, 1, 1, corresponding to the perfect cube and its half.
No. 3—2, 1, 1, corresponding to the double of the perfect cube.
No. 4—3, 2, 1, corresponding to six perfect cubes.
No. 5—4, 3, 2, corresponding to twenty-four perfect cubes.
No. 6—5, 4, 3, corresponding to sixty perfect cubes.
No. 7—6, 4, 3, corresponding to seventy-two perfect cubes.

Now, in all these varieties of proportion, it must be understood, that the first term respects the length of a room or other compartment of a building, whether considered internally or externally; the second term has reference to the breadth, and the third to the height, the terms themselves merely indicating the proportion of the parts, the actual dimensions being the same equimultiples of each variety, or the arithmetical harmonies of the respective terms. These analogies, therefore, comprehend the whole doctrine of Architectural proportion; for, whatever may be the nature of the building, the relation of its parts will always be represented by the terms of the analogy employed, according to the value of the base or radical dimension of the building given.

Thus, for example, if we suppose the length of a building to be 54 feet, and the analogy of construction to be 6, 4, and 3, corresponding to No. 7 in the foregoing tablet, then we get 54 for the length, 36 for the breadth, and 27 for the height, the breadth and height being obtained from the given length in the following manner:—

6 : 4 : : 54 : 36, the breadth.
6 : 3 : : 54 : 27, the height.

Or if 54, the given length, be divided by 6, the corresponding term in the given analogy, the quotient 9 will be the greatest common divisor of the three dimensions; and if each term of the radical proportion be multiplied by the greatest common divisor, the products will be the required dimensions of the building, considered as a whole, or of any specified compartment thereof; thus we have—

6 × 9 = 54, the length of the building.
4 × 9 = 36, the breadth of ditto.
3 × 9 = 27, the height of ditto.

And the same process applies to the consideration of the rooms, and other subdivisions of the entire fabric.

The above is the method of assigning the dimensions of a room or building corresponding to a specified proportion, and it is easy to perceive, that the same process will apply in the case of any other proportion, whatever may be the name of the given dimension assumed as the radix of calculation, provided that we employ the corresponding term of the specified analogy to determine the greatest common divisor of the required dimensions.

Thus, for instance, if we suppose the breadth of a room to be 28 feet, and the analogy of construction 5, 4, and 3, as in No. 6 of the foregoing tablet; then the length will be 35 feet and the height 21; for 28 divided by 4 quotes 7 for the greatest common divisor, from which we get

5 × 7 = 35, the length of the room.
4 × 7 = 28, the breadth of ditto.
3 × 7 = 21, the height of ditto.

Again, suppose the height of a room to be 18 feet, and the analogy of construction 4, 3 and 2, as in No. 5 of our tablet; then will the length be 36 feet and the breadth 27; for in this case the greatest common divisor is 9, from which we get

4 × 9 = 36, the length of the room.
3 × 9 = 27, the breadth of ditto.
2 × 9 = 18, the height of ditto.

It would be an excellent way of exemplifying the beauty and utility of the seven proportions given above, whether as applied to an entire building, or to some compartment of it, to exhibit a plan and elevation as deduced from each of them; this, however, would extend the present paper to too great a length, and occupy too much of the writer's time, but it would be valuable exercise to the students of architecture, inasmuch as it would fix the principles firmly in the mind, and satisfy them as to the correctness of the several analogies adopted, which probably will not be so readily admitted without some kind of graphic illustration.

What we have hitherto done, has reference only to the proportions that ought to obtain in the dimensions of rooms, when considered independently of the general form of the building, and the proportions that ought to obtain in the dimensions of the building itself when considered as an independent whole. We have, therefore, in the next place, to inquire what ought to be the dimensions of the doors, windows, and other openings, to admit a sufficient quantity of air and light for the supply of apartments constructed on the principles of the foregoing analogies.

Since nature has established certain rules for giving to buildings the just and proper proportions, so also has theory established rules and maxims for proportioning the quantity of light to be admitted, according to the magnitude of the space to be illuminated. It is not necessary in this place to trace the steps of investigation which have led to the discovery of the rules and maxims here alluded to; this would carry us far beyond the subject of the present communication, and claim the aid of a higher calculus than would be consistent with the object we had in view, when the idea of this discussion first presented itself; we shall, therefore, waive the investigation, and content ourselves with simply propounding the practical rule by which the quantity of opening is to be obtained, for any proposed dimensions of the space to be illuminated. The practical rule for the quantity of opening is as follows:

Multiply the three dimensions of length, breadth, and height together, and the square root of the solid thus produced will be the superficial content of the opening required for light.

As an example of the application of the rule, we shall take the first of the preceding cases, where the length is 54 feet, breadth 36 feet, and height 27 feet; these numbers being in the proportion of 6, 4, and 3, agreeably to No. 7 of the natural scale.

The product of the three dimensions is, $54 \times 36 \times 27 = 729 \times 72 = 52488$, and the square root of this is $\sqrt{52488} = 229{\cdot}12$ square feet. Now, since the length of the room is 54 feet, we may suppose that it contains five windows in the tier; therefore, if the above root be divided by 5, we get $229{\cdot}12 \div 5 = 45{\cdot}824$ square feet for each window.

A very common and a very just proportion for doors and windows in the principal rooms of large dwelling-houses is that of two diameters, or where the height is twice the breadth; we have, therefore, to convert the square 45·824 into a rectangular parallelogram, in which the one side shall be double of the other, and for this purpose we have only to divide the given quantity by 2, and extract the square root of the quotient for the breadth or least dimension of the window, and the double of this will accordingly be the height thereof.

Thus we have $\sqrt{45{\cdot}824 \div 2} = \sqrt{22\,912} = 4{\cdot}786$ feet, the breadth of each window, and $4{\cdot}786 \times 2 = 9{\cdot}572$ feet, the corresponding height. It is not necessary to adduce more examples for the illustration of this part of the subject, for the application of the rule is so easy, that there can be little danger of even the most superficial calculator falling into error. But here, as in the foregoing department of the inquiry, we strongly recommend a graphic delineation of the room and the windows, in order the more fully to appreciate the value of the rule itself, and the correctness of the proportions employed in its production.

The third and last part of the subject relates to the determination of the proper dimensions of fire-places and chimney-flues, so as to obtain a proper degree of heat and ventilation, according to the quantity of space proposed to be ventilated. This is indeed a very important branch of practical architecture, and has of late acquired additional interest, in consequence of the dispute that has arisen between Mr. Barry and Dr. Reid, in regard to the mode of ventilating the new houses of parliament. The whole doctrine, however, is contained in a nutshell, and the desired object can easily be effected, without having recourse to the refined artifices which modern science has brought to bear upon it. The rules which nature supplies for working out her own economy are invariably general in their principles and simple in their operation; and, if practical men could only be induced to follow those rules, many of the difficulties which operate to retard the progress of improvement would be found to disappear. T.

*** This theory was propounded and treated at considerable length by Robert Morris, in "Lectures on Architecture, consisting of rules founded upon harmonick and arithmetical proportions in Building," 1736.

PRESERVATION AND METALIZATION OF WOOD.

A patent for improvements in the mode of preserving wood has been taken out in France, by Mr. Banner. As in what is called Payne's process, the air is extracted from the pores of the wood, and solutions of metallic oxides, producing "by their combination another insoluble substance resulting from a double decomposition," made to take its place. The following is a portion of the patentee's specification.

"1. The chemical agents are composed by the employment of a saturated solution of sulphate of iron, in the proportion of 5 oz. 3 dwts. to 1 quart; that is to say, having a specific gravity of 1,756 to the temperature of the atmosphere.

2. The employment of a saturated solution of muriate of lime, having a density to the ordinary temperature of the atmosphere of 2,344, or 27 oz. 7 dwts. to 1 quart. I declare that my improvements consist in the following preparations, and I claim them as being my exclusive property and invention; namely—1,000 lbs. of brass filings should be placed upon a table or bench so as to form a conical heap. I moisten this mass or heap with a solution of sal-amoniac (muriate of ammonia), composed of 24 lbs. of salt upon 200 lbs. of water, when a certain chemical action commences to manifest itself, which is rendered visible by the escape of the ammonia or volatile alkali, and aqueous vapours, so as to produce a considerable development of heat. The whole of the mass must now be stirred, to expose the different layers of the heap to the action of the air. This operation finished, it is necessary to restore to the mass a conical or pyramidal form, and to add again a certain quantity of the solution of sal-amoniac. The whole mass then loses its metallic character to take that of an earthy substance of a bluish colour. Salts of zinc and copper are now produced, and the chemical decomposition is terminated.

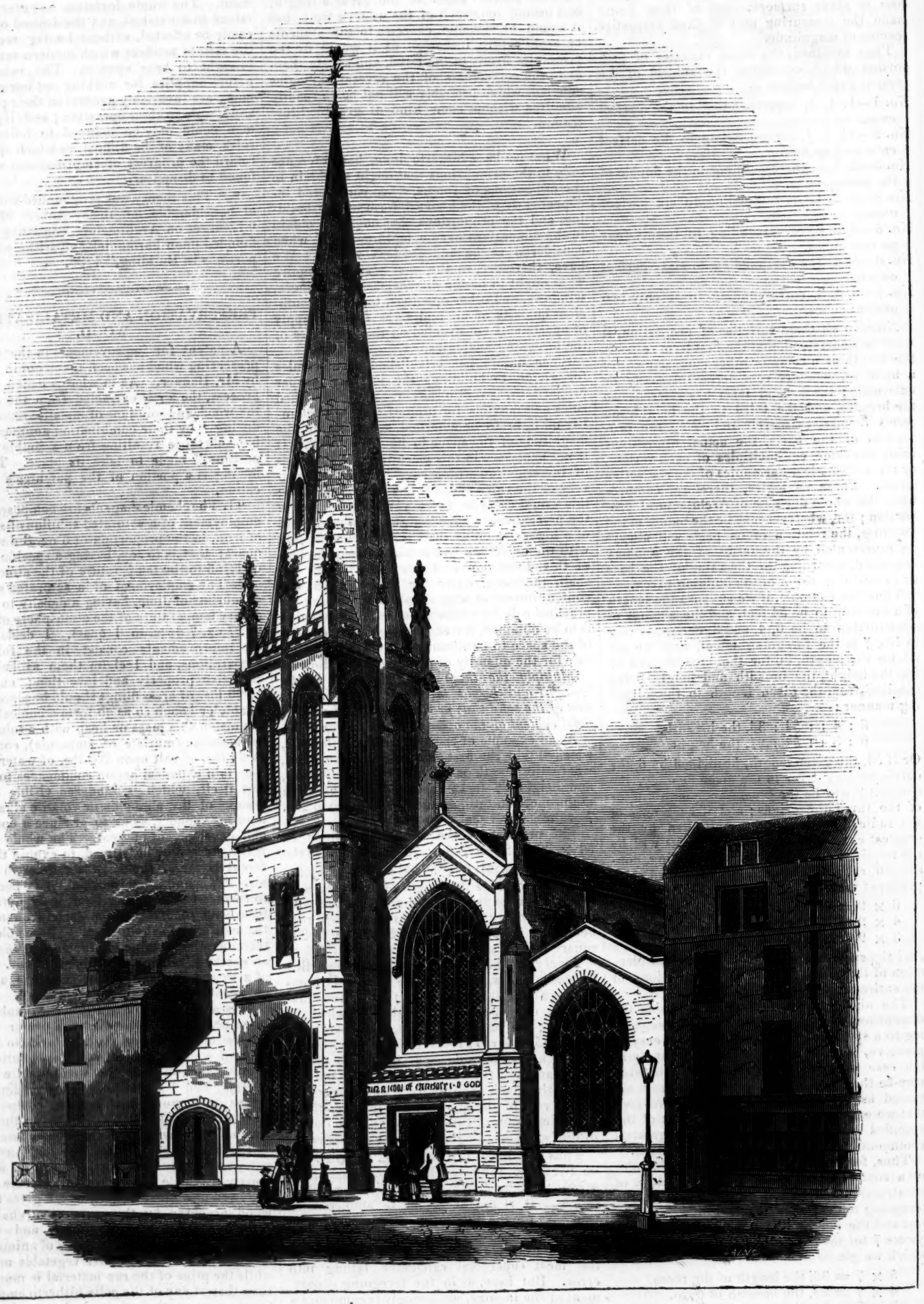
It is now necessary to dissolve this substance in sulphuric acid, diluted with water in the proportion of 20 per cent. of acid to 80 per cent. of water. I inject with this solution (by a process mentioned) the wood upon which I operate, and I decompose the preceding substance by a muriate of barytes, composed of 2 lbs. of salt with 100 lbs. of water, in the same way as in the muriate of lime above described.

The result of this combination (says the patentee) produces a metallic salt of an intensely insoluble quality, of an extreme tenacity, and of a great weight, which gives to the wood prepared by this process a character eminently impervious to water, and which makes it resist the united attacks of animalculæ and of the most destructive vegetable matter; while the price of the raw material is much less than that of any of the salts hitherto employed for the preservation of wood when used upon a large scale."

Mr. Banner gives the credit of this invention to the late Mr. Marsh, the chemist, in behalf of whose family an application was lately made to Government. We have seen a letter from Mr. Marsh, wherein, speaking of the process patented by Mr. Payne, he claims it entirely as his own. We shall be glad if this statement should strengthen the hands of those who are interesting themselves for Mrs. Marsh.

SAINT ANDREW'S, MARYLEBONE.

MESSRS. DAUKES AND HAMILTON, ARCHITECTS.



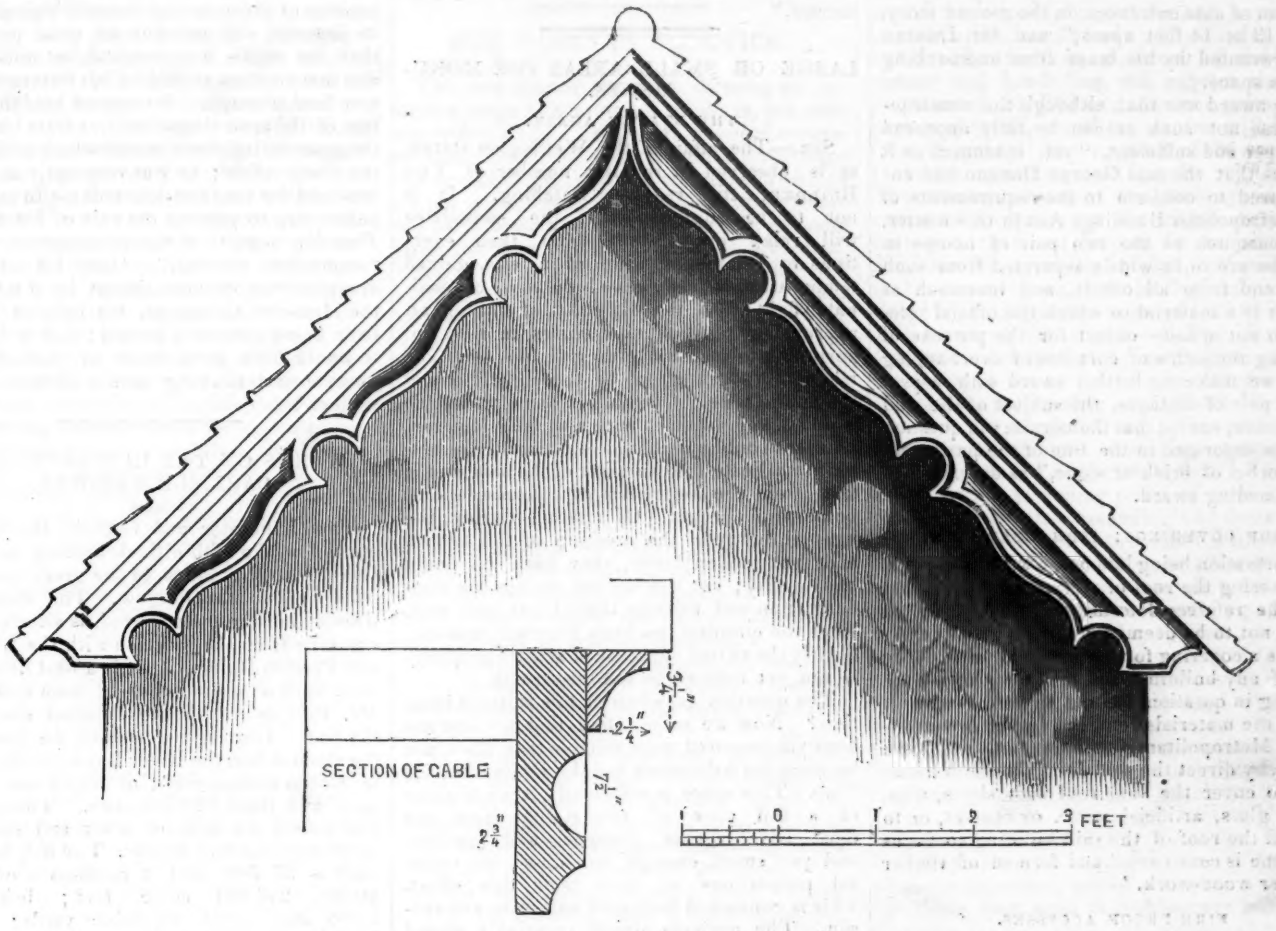
ST. ANDREW'S, MARYLEBONE.

THE new church for the district of St. Andrew, Marylebone, represented above, stands on the east side of Wells-street. The first stone was laid on the 13th of January, 1845, and the 28th of the present January is the day fixed for the consecration.

The style is early perpendicular. The length of the church, inclusive of the chancel, is 78 feet, the breadth from north to south 65 feet, and the height of the nave 55 feet. The tower and spire, both of stone, are together 155 feet in height. The whole is built of Whitby stone with Bath stone dressings. Within, columns and arches (bearing a clerestory) separated the nave from a wide aisle on each side.* The roofs are open, stained dark oak. The pews, low and without doors, are similarly stained, and varnished. A stone pulpit is attached to the first column next the chancel, on the south side. On this same side, in the wall

* A clear fourth of the whole width, between wall and column.

GABLE IN EARL STREET, MAIDSTONE.



of the chancel, are two handsomely sculptured sedilia. A large, five-light window occupies the east wall of the chancel, with stone screen beneath it, with panels to receive the "commandments." The chancel is paved with encaustic tiles, and the rest of the church with the black and red diamonds from the potteries.

There are galleries on three sides of the church, but being kept behind the main pillars, and carried on separate uprights, and stopping short at some distance from the east end, they do not interfere with the general design. The organ stands on the floor under a window, at the east end of the south aisle; and behind it there is a robing-room.

The font stands at the west end of the nave. It is octagon, with a bowl of the full size of ancient fonts. The sides of the octagon contain the symbols of the four evangelists; the lamb; the symbol of the holy spirit; the sacred monogram, and a cross.

Mr. Myers was the builder, and has earned credit by the manner in which the works are executed.

The contract was undertaken for 7,000*l.*, exclusive of extra foundations, the architect's commission, and clerk of the works' salary. This was for the *bare* building. The ornamental work, including the oak reredos, on each side of the chancel to separate it from the aisles, sedilia, carved chancel seats, and the font already described, were the special gift of friends, designed by Mr. Pugin and others, and will cost between 400*l.* and 500*l.*; besides which there is the cost of the warming and ventilating apparatus, the gas fittings, the bell, the organ, plate, and furnishing the vestry; which will probably amount to 900*l.* more.

For the last of these items there yet remains a sum of 500*l.* to be collected. The church will accommodate 1,200 persons; all the sittings will be free of rent charge, but for the *exclusive* use of the inhabitants of the district parish of St. Andrew, it being the wish of the incumbent, the Rev. Thomas Mount Fallow, A.M. that the inhabitants of a town parish should be similarly circumstanced, as regards seats in their parish church, with he inhabitants of a country parish. This is, we believe, the first of the new parish churches in London built on this principle.*

Towards the cost of erecting this building the Parliamentary Commissioners granted 600*l.*, and The Incorporated Society 900*l.*; the rest of the money has been raised by the voluntary contributions of the parishioners of St. Marylebone, and it is hoped there will be no difficulty in obtaining the 500*l.* still required.

The east window is to be filled with stained glass, to be designed and executed, without regard to expense, by Mr. Pugin.

We cannot hesitate to award considerable praise to Messrs. Daukes and Hamilton, the architects (now separated), for this design, difficulties having been successfully met, and indeed rendered into advantages.

Thus, in the entrance front, occurring as it does in a part of the street not running directly north and south, in order to place the church east and west, the line of the front does not range with the line of the houses, but is set back at the northern end, by which means room is obtained for the boldly projecting buttress against the tower, and a picturesque effect is produced. The door in this buttress, and the introduction of a stairs' turret at the southern angle of the tower, greatly aids the appearance. †

New Acquisition to the British Museum.—The Right Hon. Thomas Grenville, lately deceased, has bequeathed his valuable library to the British Museum.

Free-will Offering.—Two stained windows have been presented by Mr. Fairs, of Hanover-street, to All Saints', St. John's-wood.

* The Dean of Chichester was the original projector of the church, and to his zeal and self-denying exertions the inhabitants of St. Andrew's are principally indebted.

It should be added, that the ground-landlord, the Archdeacon Berners, gave the freehold of the site, valued at about 2,000*l.*, and the intermediate interests in the property were purchased by grants from the Metropolis Churches' Aid Fund, and the St. Marylebone Local Fund.

† Along the front of the porch, formed between the tower and a buttress at the junction of the nave with the south aisle, is sculptured "How dreadful is this place! this is none other but the house of God, and this is the gate of heaven. (Gen. xxviii.)"

BARGE-BOARD, OR VERGE-BOARD, FROM HOUSE IN MAIDSTONE.

The barge-boards, or verge-boards, fixed to the gables of ancient houses, to hide and protect the timbers of the roof, present a great variety in design. Specimens as early as the 14th century are occasionally met with, but the greater number of them belong to the 16th century. The earlier examples are much more elegant than the later. The former are usually moulded, and finished with care; while in many later specimens, openings to form the design are simply cut out of a board, with the edges left square.

The accompanying engraving represents a plain but not inelegant example, from a house in Earl-street, Maidstone, said to be of about the time of Henry VIII.

AWARDS OF OFFICIAL REFEREES.

PROJECTING EAVES.

Mr. Hibberd having built four attached houses in Norfolk-road, district of Marylebone, and formed "the projecting eaves or cornices with wooden rafters, and with fascias and lath and plaster soffits;"—information was given to the referees.

The referees directed Mr. Hibberd "to amend the same, and either to cut off and remove the whole of the said cornice, or to take down the whole of the soffit and fascia thereof, formed of laths and plaster, and replace the same with iron laths and plaster—such plaster being of clean sand and grey stone, or blue lias lime, and not less than one and a quarter inch thick, including the keying; and to fill in between the wall plate and the pole plate with brickwork, and also to make a fire-proof separation between the cornices of the adjoining houses, of the full thickness of the party wall, and in the line thereof, and extending at least one inch beyond the cornice, and two inches and a half above the roof-covering, and two inches and a half at the lowest below the soffit."

In another case, Mr. Duncan had built a pair of detached villa residences, and construct-

ed the eaves "with the projecting rafters, having the soffit and fascia stuccoed with cement on wood laths." Other pairs were to be built, "each pair being at least 22 feet apart between flank wall and flank wall, with the addition of side entrances on the ground story, about 13 or 14 feet apart;" and Mr. Duncan was prevented by his lease from encroaching on this space.

The award was that, although the construction was not such as can be fully approved as proper and sufficient, "yet, inasmuch as it appears that the said George Duncan had endeavoured to conform to the requirements of the Metropolitan Buildings Act in this matter, and inasmuch as the two pair of houses in question are to be widely separated from each other and from all others, and inasmuch as cement is a material to which the official referees do not wholly object for the purpose of covering the soffits of cornices of overhanging roofs, we make no further award with respect to the pair of cottages, the subject of the said requisition, except that the cornices in question must be separated in the line of the party wall by a corbel of brick or stone," as described in the preceding award.

ROOF COVERINGS: ASPHALTED FELT.

Information being laid against Mr. Cameron for covering the roof of a house with asphalted felt, the referees determined "that asphalted felt is not to be deemed a cement proper to be used as a covering for the external parts of the roof of any building, and that the roof of the building in question has not been covered with any of the materials required by the first-mentioned Metropolitan Buildings Act. And we do hereby direct the said John Cameron forthwith to cover the said roof with slates, tiles, metal, glass, artificial stone, or cement, or to take off the roof of the said building so far as the same is constructed and formed of timber or other wood-work."

FIRE-PROOF ACCESSES.

The Messrs. Druce having made certain alterations in the Baker-street Bazaar, the district surveyor objected "that the said building operations form, or are intended to form, a way of ingress and regress from Baker-street to the furniture department of the said bazaar, which said way is not wholly supported, constructed, or intended to be made and finished fire-proof, the said bazaar being a building of the third or public class of building."

It was contended on the part of Messrs. Druce and Co. that not a brick had been disturbed, and that the work in question is a mere platform on trestles, and that nothing has been done to form an entrance to either of the buildings in question; and with respect to a previous award of the referees mentioned in the information, that the intention therein referred to had been abandoned for the present, the communication between the bazaar and the house being made that the rooms of the house may be used as pattern show-rooms in connection with the furniture department of the bazaar. The referees, on attending, found that the work in question consisted "of the removal of the sashes from the window of the back room on the second or ground-floor story of the house No. 68, Baker-street, and of the sashes, or whatever else may have occupied the sash-frame, of the window opposite to it in the second or ground-floor story of the bazaar; of the formation of a short flight of wooden steps in each of the two buildings, to lead up to the sills of the sash-frames; and of a wooden platform, set as a gangway from the window of the bazaar to the window of the house, and extending over the lead-flat-roof of the kitchen of the house."

The award was:—"That, by the removal of the sashes or other fittings from the opposite windows of the bazaar and of the house, and the formation of steps and of a gangway to lead to and from the bazaar and the house, such removal and formation being for the purpose of using the house in connection with the bazaar, the said house has been altered so as to bring it within the class of building to which the bazaar belongs, that is to say, to the third class; and we do hereby direct, that unless all the conditions prescribed as to buildings of the third class be complied with, and especially the rule with regard to buildings of the third class in part 6 of schedule C of the first-mentioned Metropolitan Buildings Act, the said flights of steps and the said gangway be forthwith removed, and the sashes or other fittings to the opposite windows restored, so that the said house may not be used as an entrance to, or otherwise in connection with, the said bazaar or any part thereof."

LARGE OR SMALL AREAS FOR MONUMENTS.

THE STATUE AGAIN.

SIR,—The affair of the Wellington statue, as is observed in the last number of THE BUILDER, still requires watching. It is not to be supposed that the committee will relax one instant from their exertions to retain possession of a site, gained temporarily, at least, after long years of obstinate fight; and the difficulty of finding an appropriate position now comes in most opportunely to their aid, and will, no doubt, be taken full advantage of by these guardians of the public taste. Certainly, if once the statue is down, and provided with a suitable location, no event could possibly have occurred the better to vindicate the character of the said public taste from the aspersions of connoisseurs at home and abroad. Of apathy, during the interval between the erection of the bronze and the wooden horse, they have no doubt been guilty; but the almost unanimous condemnation and ridicule that it has met with, since the question has been generally mooted, clearly shews that our sense of artistic propriety is not yet reduced to the lowest ebb.

The question is, where is this suitable location? Now we cannot find that any one has been yet proposed more suitable than the space between the Athenæum and the United Service Club. This space is sufficiently large to allow of a full view of the statue from the most advantageous distance and position, and yet small enough to allow its colossal proportions to have their due effect. This is consistent both with authority and reason. The ancients almost invariably placed their largest monuments, whether of architecture or sculpture, in a confined space, so that the first point of view was at such a distance that their grandeur of effect was proportioned to the increased cost and labour of their execution. This cost, if, as the size of the object is increased, you increase without limit the space in which it is placed, is entirely thrown away. The monolithic column of St. Petersburgh is reduced to insignificance by its position in the centre of an extensive review-ground; while that of Trajan, on the contrary, possesses the full value of its dimensions, from the comparatively small extent of the forum in which it is situated. Still more contracted in their dimensions were the receptacles of the colossal statues of the Greeks of the greatest celebrity, viz., the cells of their temples; and the authority of the ancients, though by no means to be implicitly followed, yet, as shewing us the opinion of those who were at least capable of imagining and executing works which, mutilated as they now are, still are looked upon as the master-works of human genius, must surely be of some value.

The position indicated, too, is one of the greatest publicity, and it appears to call for some important object to fill up the vacant space; in addition to which, the statue would group well with the column beyond. The advantage of the union of several objects of art in one spot has never been sufficiently thought of in this country. We have no space in which all the greatest wonders of art are concentrated, as in the Roman forum—no *réunion* of sculpture and architecture, to attract the attention of the passer-by, and tempt him to linger, as in a costly museum. Statues by our best artists are banished to the remote and deserted squares, dropped down, one here, one there, so unassuming in the position they have taken up as hardly to attract a passing glance; whereas, by collecting some of the best of them in one or two spots, as in Trafalgar-square, or the space before alluded to, our character as a nation for taste and the appreciation of works of art, would be much more fully and deservedly vindicated than it now is.

These remarks and suggestions would not have been made, did it not appear that the question of site was again in a state of uncertainty, and that there was also reason to apprehend that the attention of the public might be withdrawn, in a great measure, from the subject, while some danger of an unfortunate result still remained—that the army would be disbanded before the enemy was completely conquered, and the rebel reduced to obedience. While the statue, and, what is even more destructive of the beauty of the arch's proportions, its pedestal, still remain, we must remember that the snake is "scotched, but not killed," and that no stone should be left unturned to ensure final triumph. We cannot hold the architect of the arch altogether free from blame, for the *apparent* indifference with which he regarded the whole affair; he was very aptly and justly satirized for his faint-heartedness in taking no public step to prevent the ruin of his work, in *Punch's* report of the examination of the "competent persons." Until his letter was dragged from its concealment by a motion of the House of Commons, his opinion was far from being generally known: had it been so, it would have done much in leading public opinion and drawing earlier attention to the subject.* J. L.

WORKS ON THE LANCASTER AND CARLISLE RAILWAY.

THE Lancaster and Carlisle Railway was opened on the 16th ultimo, making an extension of seventy miles in the great trunk line from London to Glasgow. The new station from which the train started, is situated about one mile from the junction with the Lancaster and Preston Railway. It is a neat little structure, built of white freestone, from a design by Mr. Tite, as are all the different stations on the line. Leaving the station, we pass on to the viaduct over the River Lune, which consists of eleven arches, eight of which are 33 feet span, and three 120 feet span. The eight 33 feet arches are built of brick and stone, the large arches are of timber. The height of viaduct is 55 feet, and it contains — of stone, ashlar, 246,383 cubic feet; brickwork, 1,098 and two-thirds cubic yards; timber, 27,300 cubic feet; and ironwork, 63,984 lbs.

The tide rises twelve feet in the river Lune, and the foundation of the South River Pier had to be sunk 25 feet below low water. Leaving the Lune, we pass on to Hest Bank, and here the line passes the end of Morecombe Bay. Here also is the first station from Lancaster. Passing on from Hest Bank, we next reach Carnforth. The gradients of this portion are 1 in 471, and 1 in 300. The next work of interest is a handsome skew bridge over the Lancaster and Millthorpe turnpike-road, built very obliquely, being on an angle of 30°. The arch contains nearly 4,000 cubic feet of stone. The gradient here is 1 in 131 for about 2½ miles, which bring us nearly to Holme, the third station from Lancaster; 14 miles from Lancaster the line crosses the river Beetha, whence there is an uninterrupted rise of thirteen miles, broken into gradients, varying from 1 in 193 to 1 in 105. At 20 miles from Lancaster is the junction of the Kendal and Windermere Railway. The line now proceeds upon very heavy embankments and cuttings. One of the most formidable of these contains 150,000 cubic yards of earthwork. We now shortly cross the Sedburgh turnpike road, over which is an iron girder bridge. Then skirting the Benson Knot, one of the highest hills in Westmoreland, the line crosses the turnpike-road from Kendal to Appleby, close to which is a very heavy rock cutting, containing 90,000 cubic yards. Then follows a large embankment in the Valley of the Mint, in which are 121,000 cubic yards, succeeded by a cutting, from which 200,000 cubic yards have been taken. At the end of this cutting the Appleby turnpike-road is again crossed. 25 miles from Lancaster is Docker Gill viaduct, consisting of six arches of 50 feet span, and 75 feet high; the total length of viaduct is 370 feet; the width between the parapets 25 feet. It is built of lime stone, and contains 7,000 cubic yards. Following the

* We continue to receive numerous letters on this subject. Our correspondent, "An Inhabitant of May Fair," after scolding the government for permitting the statue still to remain up, again urges "that the site most appropriate for its reception is, on that portion of ground which one may designate 'no man's land,' in St. James's park, at such a distance within it as good taste might appoint, facing the Horse Guards, and in front of the parade where the household troops relieve guard every day in the year. The parade would not be encroached on, there would be some distance from which it might be viewed, and the representation of military honour and renown would be constantly before the soldier's eye."

viaduct is a very heavy cutting of hard material, called samel, containing 152,000 cubic yards. 1 mile further is the Low Gill embankment, containing 170,000 cubic yards, being one of the highest banks in England, reaching nearly 95 feet above the level of the ravine. Next is a very great piece of excavation through blue rock, in extent about 120,000 cubic yards. Of this hard material none of the excavations for some miles northward are altogether clear. We now reach Dillacar Hills. Through one of these hills is a very large cutting, containing 70,000 cubic yards of solid blue rock. The line is here carried over the Borrow Water, near its junction with the Lune, upon a neat viaduct, 68 feet high, and composed of three arches, 45 feet span each. We next arrive at Borrow Bridge, where the gradient begins of 1 in 75, for eight miles in length. Here also is the Borrow Bridge cut, containing 69,500 cubic yards of hard blue rock; the Lune embankment is next, and contains 75,000 cubic yards. It rests on the old bed of the river, which has been diverted from its course. Thirty-four miles from Lancaster is Birbeck embankment, containing 200,000 cubic yards of earthwork, and a viaduct 45 feet in height, the arches being similar to those of Borrow viaduct. The line then passes on to Shap Wells without much difficulty, with the exception of cutting through the Crosby Ravensworth Fells, containing about 65,000 cubic yards of rock and earth. A mile and a half farther is Shap Summit, which is 888 feet above the line at Morecombe Bay, and 1,000 feet above the level of the sea; rising 60 feet overhead on each side, are rugged walls of hard rock, presenting a magnificent appearance. This was the most difficult piece of work on the line, and five hundred men were clustered upon it for many months. Upwards of twenty-three tons of gunpowder were used in blasting it. The length of the cutting is about one mile, and the quantity of material excavated 350,000 cubic yards, one-half of which was rock. The formation of it occupied two years. The line now proceeds along the east side of the town of Shap, through a heavy cutting of limestone rock, descending on a gradient of 1 in 125, and passes under a skew bridge at an angle of 45°. The line now pursues its course by Shrimsby; the ground at this point, being precipitous, has caused a succession of heavy works, viz., the Hackthope cutting, containing 140,000 cubic yards; the Clifton embankment, 200,000 cubic yards, and the Lowther embankment, 270,000 cubic yards.

At this point (Clifton), in the course of excavation, a Roman altar, in a high state of preservation, and inscribed to Jupiter, was dug up. This relic of antiquity is now in the possession of George Mould, Esq. We now cross the river Lowther on a large and handsome viaduct, consisting of six arches of sixty feet span. The piers are eight feet thick at the springing, and increase to 17 feet 6 inches at the base; its total length 500 feet. On the north side is a large cutting through clay, containing 275,000 cubic yards. A mile and a half from Lowther the line crosses on a viaduct of some beauty, consisting of five semi-circular arches, 50 feet span each. Its height is 70 feet, and its extreme length 300 feet. We now reach a large cutting, containing 180,000 cubic yards. From Penrith the line runs straight and level on the west side of the turnpike road. Crossing the road, it enters the valley of Pettrill, through which it pursues an almost direct course to Carlisle: the first inclination in this valley is 1 in 184, making a fall from Shap of 500 feet. We then enter a cutting a mile and a half long, 30 feet deep, containing 250,000 cubic yards. Then commences another incline of 1 in 169 for 2½ miles, which makes a fall from Shap 575 feet. An average fall of 1 in 200, with gentle curves, brings us to Wreay, where much difficulty has been experienced from frequent slips. The Wreay cutting is situate on the east side of the village, a mile long, 45 feet deep, in the deepest point; the quantity of earth work amounts to 410,000 cubic yards. The line passes Upperby on the east, joining the Newcastle and Carlisle Railway at the London road station. From Upperby the gradient is 1 in 140; at Carlisle the level of the rail is 36 feet above the rail at Morecombe Bay, and 852 feet below Shap summit. Besides the principal viaducts mentioned, the works on the line comprise fifteen turnpike road bridges, sixty-four public road bridges, eighty-six occupation bridges, and sixty level crossings.

NEW WORKS IN WOOLWICH.

THE new marine barracks, forming an extensive range of substantial buildings, are now nearly completed. These are to afford accommodation for 1,000 men, and form three sides of a square in plan. Brick and stone dressings are the materials of the outside; iron girders and brick arches separate the stories; asphalte forms the floors, and the whole is fire-proof. Ventilation is effected by a revolving fan worked by weights. In front of the main building an arcade, two stories in height, is formed by square brick piers and arches, affording spacious covered walking places, with room for six abreast. Messrs. Rigby are the builders, under the government officers.

The number of new barracks now in course of construction, can scarcely fail to excite attention. Those in the Tower of London, at Bristol, at Birmingham, and elsewhere, have already been mentioned by us. The way in which the designs for these structures are obtained, and information as to the gentlemen who take the credit or discredit of them (as architectural works), may afford matter for some remarks on another occasion.

Very extensive improvements are contemplated in the lower part of Woolwich, where many houses are to be pulled down, and a spacious new street formed.

The new church (designed by Mr. F. Fowler), has been finished for some time, but is not yet opened; an objection which the official referees have thought it their duty to make, has caused the delay. The tower is left incomplete till fresh funds are provided.

In the old church, a stained glass window by Mr. G. Hoadley, from a drawing by Mr. Corbould, has been recently put up. It illustrates the line, "and he bearing his cross, went forth." The figure of our Saviour is seven feet high, and is painted in the modern style, to accord with the character of the church. The border around the window is formed of the passion flower, and a conventional scroll entwined; and in our opinion, somewhat militates against the general effect.

The Roman Catholic Church by Mr. Pugin (who, by the way, is very ill), is probably already known to our readers; as well as Mr. Donaldson's "Scotch Church," which closely adjoins it.

RAILWAY JOTTINGS.

A "Law Reformer," a correspondent of the *Times*, on the subject of the "liability of committee-men," while adverting to the fact that without joint-stock companies we should have had neither canals nor railroads, gas-light nor supply of water, life insurances nor joint-stock banks, splendid club-houses nor any, indeed, of those magnificent results of joint-stock contributions which make England the wonder and envy of the world; with great good sense and ability points to and deplores the clear and inevitable sequence of cause and effect whereby the present state of the law, by rendering even non-acting committee-men or non-acting directors subject, by the acts of partners or agents, to liabilities, *in any case whatever, to any unknown amount*, and even to the utter ruin of themselves and families, not only discourages the establishment of joint-stock unions of fixed, limited means, in which men of capital might risk a definite sum of money and nothing more; but, by means of such discouragement, inevitably tends to throw existing establishments out of the hands of responsible and prudent capitalists altogether, into the exclusive management of either knaves with nothing to lose, or fools, with immense risk of losing all that they possess. The sooner such a state of the law as this is put an end to, of course, he thinks, the better; and surely it would be *wise* to remove these ridiculous impediments to the employment of capital *at home*. We have all a little to risk. Why should we not be allowed to judge for ourselves how much we will risk? Creditors of companies can always be safe, for they never need trust, and it is much better they should not; for companies requiring such aid must be bubble companies, which would thus at once be burst. "To encourage the employment of capital is to better the condition of the labourer and the artisan."—The labour for railways already sanctioned, but not formed, according to calculations announced on Wednesday week by Mr. Houldsworth, chairman of the Manchester and Leeds line, will require the employment of 500,000 men for ten years, supposing that this number *can* be withdrawn from the general labour market of the country. It is the maximum that *can* be withdrawn. The maximum cost of the railways now in course of formation, or for which Acts have been got, in Great Britain, he estimated at 200,000,000*l.*, of which 160,000,000*l.* will have to be expended on those in England; and of this 160,000,000*l.* the sum of 120,000,000*l.* will be spent for labour.——The *Somerset Gazette* assures us that a new engine of Mr. Stephenson's lately "did" the express train business on the London and North Western, between Birmingham and Wolverton, 60¼ miles, in 64 minutes, including stoppages—upwards of a mile a minute, in fact. The gradients are an ascending plane of some length at starting, and then ascending and descending gradients of 16 feet in the mile for the rest of the distance. The London and North Western Company, it is said, are determined to sustain this speed, and so come up to the Great Western standard.——Fears are reasonably entertained that the cutting of the tunnel on the railway from Ipswich to Woodbridge, which penetrates through the hills north of the town, may injure or withdraw the supply of water to the town.——The Cambridge station is likely to be another of those "largest ones in England" which are getting rather rife of late. The arcade is to be 410 feet long.——The Stour Valley Extension branch line from Bury to Lavenham, for which the plans are deposited, would pass over a viaduct 370 yards long, west of Sicklesmere toll-gate, cross the Ipswich road, and proceed along the vine fields to Eastgate-street, crossing it by an arch of 45 feet span and 20 feet in height, towards the Ipswich and Bury line. It will be stoutly opposed, however, by landowners.——The Cheltenham General Hospital and Dispensary has been purchased by the Cheltenham and Oxford, at cost price, for the purposes of their works, on condition that they provide an extended building on an improved site. The Grammar School, too, it appears from the deposited plans, will be required, and another, and probably also extended building, erected in its place.

NOTES IN THE PROVINCES.

A proposal to preserve and restore the old Grammar School at Ipswich, the last relic of its ancient and numerous monastic institutions, has been rejected by the corporation, many of whom, strange to say, are nevertheless members of the Archæological Association. This interesting relic was originally the refectory of the Dominican friars, and very ornamental in character, and is still in comparatively good general preservation, with its black oak roof defaced with many a coat of whitewash certainly, but exhibiting, nevertheless, many traces of its ancient ornamental painting.——A memorial, or sea-mark, in honour of the late Earl of Yarborough, is to be erected in the Isle of Wight. The subscriptions now amount to upwards of 600*l.*——The repair and re-pewing of Trowbridge church, Wilts, is talked of.——Government is about to be applied to for permission to erect a custom-house at Birkenhead, to be forthwith commenced.——Two extensive rice-mills are in course of erection at Liverpool, where rice is being ground at a great rate, day and night, in eight other like establishments, in consequence of the failure of the potato crop. A thriving trade is at present done here in the importation of paving-stones from the Isle of Man. The council have organized a regular sanatory staff, under the new Act, which comes into operation to-morrow (1st January, 1847). The provisions of this new leaf which is to be turned along with the in-coming year, seem to be no less beneficial and excellent than stringent and peremptory. The smoke from furnaces, steam-engines, bakeries, &c., from every steamer plying on the Mersey, every steamer

entering coastwise into the Mersey, must be "used up," under heavy penalties, though probably even the pecuniary profit to the consumers themselves will at least equal the forfeit in amount—a somewhat odd and unusual ground of compulsion this, as futurity will doubtless think, independently altogether of the still more precious and substantial benefits derivable from a clear atmosphere, clean-swept lung-flues, and vigorous lungs, consuming their own pure *pabulum vitæ* instead of smoke. Many other nuisances and evils are to be simultaneously remedied. "Middens" are to be kept under, mendicants' lodging-houses licensed, and their occupants restricted in number, cellars limited in extent, or rather extended in limit, and other means enforced to open the way to a more vigorous and healthy generation of fellow men. The bakers appear to have been amongst the first to bestir themselves in this new movement, albeit one of salutary compulsion, in the meantime; and chaffer-ovens, patent smoke-consumers, and the like, discussed, and with a will, too, to the work.——The penny-a-mile omnibus system is to be started in Manchester.——Contracts for the particular branches of work connected with the erection and completion of the new Town-hall at Doncaster were to be advertized in course of the present week. The plans and specifications are said to be complete. The Old Angel is almost wholly demolished. ——A tower has been added by subscription to Maryport church, and by similar means a large and commodious sunday-school is to be founded in March next, in connection with this church.—— Explosive cotton, or tow, and sawdust, have been used in the north, of late, for blasting whinstone rocks, it is said, of the most solid description, and, as the *Edinburgh Weekly Express* has it, "with splendid effect;" a bore 2¼ inches in diameter and 3 feet in length, charged with 9 oz. of tow, in the usual place of 3 lbs. of the *old* material, gunpowder, blasting to the extent of 10 tons, and indeed a charge of 11 oz. of tow and cotton mixed blowing up, or bringing down, no less than 15 tons. ——New joint-stock markets are in the way of being got up in the north, at Elgin.

BARRY'S PICTURES AT THE SOCIETY OF ARTS.

A MEMBER of the Society of Arts, who considers himself improperly alluded to in a letter on this subject, which appeared in the last number of our journal, has taken pains to shew us that, so far from being a "disappointed contractor for the decoration of the hall," he could not conveniently have undertaken any of the work there, if it had been offered to him, and that he has no motive for the charge he has made, in respect of the injury done to the pictures, but desire to preserve for the society what every one must consider their sheet-anchor.

It appears to us of the utmost importance, as we said a fortnight ago, that all proper steps should be taken to ensure the preservation of these works. The Council owe it to themselves and to the Society, to shew that they duly regard their trust. The production of the report of the eminent artists who are said to have examined the pictures, would probably set the matter at rest.

TO PREVENT INJURY TO BRICKWORK BY FROST.

SIR,—Having been engaged in erecting brickwork at factories and places of business where the work was required to be done regardless of the weather, my attention was drawn to the best mode to prevent the frost affecting the mortar. I have adopted the following plan for the last eight years with complete success; and as this winter is likely to be severe, I think it may be useful to make it more generally known through your valuable publication. To the proportion of six bushels of river sand mix one pound of common salt; instead of screening the sand wash it, and let it be well saturated with water. Then take the usual proportion of greystone lime, which must be ground, and make it up the same as concrete to the proper consistency. The mortar should be used while warm, and if convenient the brickwork should be covered up for one night.—I am, Sir, &c.

Stamford-hill. JOHN WORKMAN.

New Books.

The Railway Shareholder's Manual; or Practical Guide to all the Railways in the World. By HENRY TUCK. 8th Edition. Effingham Wilson, Royal Exchange.

WHEN a book has passed through eight ditions, recommendation would seem unnecessary: the inference may fairly be drawn that it contains matter valuable or interesting to the public. The present edition of the manual has been carefully revised, and contains much additional information, together with statistics never before given to the public. The writer has a hard "fling" at "Cato" and the *Times*, and is perfectly satisfied that all obligations incurred on account of railways will be met without in any degree affecting the money market. The preface states that out of 561 bills presented to the House of Commons in the last session, 271 only have received the royal assent. "Of these 24 were for amalgamations and purchase, 7 for new stations and enlargements, 131 for branches to be constructed by old companies, and 109 for new lines by new companies, the whole requiring a capital of about 100,000,000*l.* The total length of these lines is upwards of 4,700 miles (60 of which is tunnelling) and will require 55,000 acres of land for their site."

Correspondence.

HIGHBURY CHURCH COMPETITION.

SIR,—Though your columns have, from time to time, teemed with letters and articles exposing the abuses of the present system of competition, the evil is not yet checked, as the following circumstances will plainly shew.

A committee was lately formed at Highbury, in the parish of Islington, with the view of erecting, if possible, a church suited to that hamlet. Amongst the several wealthy families residing there, many are dissenters, and consequently subscriptions for an episcopal church would necessarily be limited; but as the inhabitants had greatly assisted in defraying the expense of building the other district churches, it was confidently expected the parish at large would, in return, enable them to raise a sum of 4,000*l.* Accordingly, instructions were given to seven or eight architects to send in designs, the cost of carrying out of which was, on no account, to exceed the sum abovementioned.

After a time, the committee distributed amongst the subscribers to the work a circular, headed by a smart vignette, exhibiting indeed an elegant structure, which an episcopalian would rejoice in seeing erected. The engraving to which I allude is taken from the design of Mr. Allom, whose intended structure, if it can be carried out in *every particular* at the sum proposed, will entitle him to the warmest thanks, not of the committee only, but of the whole body of architects, inasmuch as they may learn from him how to build with little money. The remark of an eminent architect, on seeing the vignette, was this—"The sum named, instead of being printed 4,800*l.*, should have been 8,400*l.*, as being nearer the mark." Of course, the unsuccessful competitors, whose abilities and taste had been strictly limited to preparing designs for a church that could actually be built for the sum proposed, are not a little surprised and mortified, to find a plan accepted which must necessarily involve an expense of at least double the amount prescribed.—I am, Sir, &c.,

AN ENEMY TO UNFAIR COMPETITION.

Dec. 28, 1846.

DISCOVERY OF ROMAN MANUSCRIPTS.—The excavators on the Caledonian Railway, in the wild and solitary passes of the Avon valley, near Beattock, have just turned up, in this strange deposit, a small stone trough carefully placed on a flat block, and enclosing a bronze case with "a precious manuscript" rolled up in it, 30 feet in length by 2 feet in breadth, with the title of "Historia Romæ," in large distinct characters at the head. The perhaps too sanguine anticipation is, that here we have one of the long lost and sought for books of Livy; though it is more likely, we should think, that the care displayed in its preservation was of a paternal order, hence not Livy's, unless he had been a sojourner, in his day, at Beattock.

Miscellanea.

ARCHITECTURAL NOMENCLATURE.—SIR,—The *Ecclesiologist* for November last contains a critique on the "Architectural Notices of the Churches of the Archdeaconry of Northampton. No. 3," in which the following sentence will be found:—"We really lament that the letter-press is deformed by the use of the absurd terms, 'early English,' 'decorated,' &c., particularly as Mr. Poole has adopted the improved nomenclature of Professor Willis for details." I think it would be a gratification to some junior ecclesiologists to know why "first," "middle," and "third pointed," are so much preferable to the terms above mentioned. I shall not offer any arguments in favour of the old system beyond this, that I believe that "first pointed" conveys nothing, expresses nothing, that is not conveyed, and equally well expressed, by "early English;" and, with reference to "perpendicular," it appears to me far superior to "third pointed," as it expresses the peculiarity of the style.—AMATEUR.

PROJECTED WORKS.—Advertisements have appeared in the current newspapers for tenders for the construction of nineteen miles of the Malton and Driffield Railway, with a tunnel, bridges, stations, &c.; for the erection of an extensive cotton-mill, near Mansfield; for materials for metropolitan roads, and for making roads at Aigburth on the Mersey, and cutting and masonry work in altering and improving roads near Glasgow; for the construction of a wooden wharf at the latter place, promptly; for 20,000 flue bricks to be shipped to Banffshire; for water cranes, turn-tables, switchings, &c. for the Chester and Holyhead Railway; for cast-iron work for the city of London Sewers Commissioners; for the construction of the Rugby and Leamington Railway, and of various branches connected with other lines; and for widening the Leicester and Swannington branch, &c.

THE SANATORY ACT AT CROYDON.—The proprietor of a piece of land with an open drain or cesspool, into which all the filth and impurities of the higher ground accumulates, was summoned, on Saturday last, to the police-court, where evidence was called to the effect that fever prevailed around it, that noxious effluvia issued from it, and that, in all probability, it was the cause of much injury to health, and therefore ought to be covered in. The magistrate declared, that he should have ordered this at once to be done, but as the proprietor, Mr. Bridge, had met the case very fairly, in not only proposing to aid in the removal of the nuisance, but in having previously endeavoured, though hitherto unavailingly, to obtain the co-operation of the parish authorities, who were as much responsible as himself, in such a case, the matter was allowed to lie over for a fortnight, in order that some amicable arrangement might be come to.

PUBLIC WORKS IN IRELAND.—On the 3rd of October last, 26,193 persons were employed on the relief works in Ireland, and on the 28th of November the number had increased to 273,023 persons!—able-bodied men—the individual representatives of at least a million of people—all dependant on the Government, not only for present but for future support—all irresistibly attracted, and still followed by more and more, from their only permanent source of support, the agricultural labour of the land, by the surety of money wages, in the place of that land-truck remuneration which the failure of the potato-crop, and the prejudice, and other difficulties, in the way of the substitution of new and even superior produce, has, in the meantime, rendered altogether valueless, in their possession. Government have recently issued fresh orders on the subject, with the view of turning the labour into its former channel.

THE PAVEMENTS OF PARIS.—From official returns lately published, on the paving and maintenance of the pavements of Paris, it appears that the paved surface of the streets of that capital is 3,321,000 square yards, of which the state maintains 1,083,090 square yards, and the corporation of Paris 2,238,000 yards. The charge of keeping up this pavement is fixed at 53,000*l.*

COMPETITION.—The Scarborough parish church restoration plans will be received till 1st March, 1847.